

We claim:

1. An isolated psychrophilic bacterium *Pseudoalteromonas haloplanktis*, or a variant or mutant thereof that produces a cold-active beta galactosidase that is specific for lactose and has stable enzymatic activity at a temperature below 8°C.

2. A method for producing a cold-active beta galactosidase that is specific for lactose and has stable enzymatic activity at a temperature below 8°C, comprising

culturing an isolated psychrophilic bacterium *Pseudoalteromonas haloplanktis*, or a variant or mutant thereof that produces a cold-active beta galactosidase that is specific for lactose and has stable enzymatic activity at a temperature below 8°C, under conditions effective for producing the beta galactosidase,

and harvesting the beta galactosidase from the bacterium.

3. An isolated DNA comprising a sequence which encodes a cold-active beta galactosidase that is specific for lactose and has a stable enzymatic activity at a temperature below 8°C.

4. The isolated DNA of claim 3, which is isolated from a beta galactosidase-producing microorganism.

5. The isolated DNA of claim 3, which is isolated from the psychrophilic bacterium *Pseudoalteromonas haloplanktis*.

6. The isolated DNA of claim 5, wherein the psychrophilic bacterium *Pseudoalteromonas haloplanktis* has the BCCM™ Accession Number LMG P-19143.

7. The isolated DNA of claim 3, which comprises the sequence shown in SEQ ID NO: 1.

8. The isolated DNA of claim 3, which encodes a polypeptide comprising the sequence shown in SEQ ID NO: 2.

9. An isolated DNA which hybridizes to a DNA that encodes a cold-active beta galactosidase that is specific for lactose and has a stable enzymatic activity at a temperature below 8°C.

10. An isolated DNA which hybridizes to a DNA that encodes a cold-active beta galactosidase that is specific for lactose, has a stable enzymatic activity at a temperature below 8°C, and is produced by the psychrophilic bacterium *Pseudoalteromonas haloplanktis*.

11. A recombinant plasmid comprising the DNA of claim 3, which expresses the cold-active beta galactosidase.

12. A recombinant plasmid comprising the DNA of claim 5, which expresses the cold-active beta galactosidase.

13. A recombinant plasmid comprising the DNA sequence of claim 3, operatively linked to an expression control sequence.

14. A recombinant plasmid comprising the DNA sequence of claim 5, operatively linked to an expression control sequence.

15. A cell transformed with a recombinant plasmid of claim 11.

16. A cell transformed with a recombinant plasmid of claim 12.

17. A cell transformed with a recombinant plasmid of claim 13.

18. A cell transformed with a recombinant plasmid of claim 14.

19. The cell of claim 15, which is a bacterium or a yeast cell.

20. The cell of claim 16, which is a bacterium or a yeast cell.

21. The cell of claim 17, which is a bacterium or a yeast cell.

22. The cell of claim 18, which is a bacterium or a yeast cell.